REMARKS/ARGUMENTS

Claims 1, 11, 14 and 17 have been amended to include the limitation that the complexity thresholds are based on predetermined capabilities of a wireless device and that the graphics object is a vector graphics object to more fully claim the present application. Claims 19 to 22 have been added. The remainder of the claims are unchanged. No admission or representation is made by the present amendments and argument other than that explicitly provided below.

The Examiner has rejected claims 1, 3, 4-5, 11, 14-15 and 17 under 35 U.S.C. 103(a) as being obvious having regard to Isaacs (U.S. Patent No. 5,894,308) in view of to Williams et al. (US Patent Publication No. 2002/0158880), and further in view of Probets (Document Engineering Lab, http://www.eprg.org/research/SVG/flash2svg/). The Examiner also rejects claims 6-10 and 16 under 35 U.S.C. 103(a) as being obvious over Issacs, in view of Williams et al., Probets, Noyle (U.S. Patent No. 6,874,150) and W3C (http://www.w3.org/TR/SVGMobile/). Claims 1, 6, 11, 14, and 17 have been amended to expedite the allowance of the application and for no other reason. The Applicant submits that the amended claims are believed to be allowable for the reasons set forth below.

Amended independent claims 1, 11, 14 and 17 now include the limitation of former claim 6 that the complexity thresholds are based on predetermined capabilities of the wireless device, and that the graphics object is a vector graphics object. As noted at paragraph [0039] of the present application as originally filed:

> [0039] **The complexity restrictions that are applied in step 720 are generally selected based on the capabilities of the media engine at the viewing device 112, which in turn will typically depend on the processing and memory resources available at the viewing device and the bandwidth of the communications channel 114. The complexity restrictions or thresholds can vary depending on the requirements of the specific application,** and in various embodiments are set up to limit the polygons defined in converted graphic 104 to polygons that are simple polygons, to polygons having no internal islands, to polygons having only convex vertices, and/or to polygons having fewer than a predetermined number of edges.

Non-analogous prior art

In Applicant's previous replies, the differences between Isaacs and Williams and the claimed invention were not full described because the Applicant considered those references to be plainly non-analogous prior art on the face of these documents. A more detailed explanation as to why these references are non-analogous prior art is provided below.

The Applicant notes that to rely on a reference under 35 U.S.C. 103(a), the reference must be analogous prior art. As stated in MPEP **2141.01(a):**

> "In order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned."

The claimed invention relates to the conversion of previously generated, Web-based **vector graphics** for "efficient" delivery to wireless communication devices. As will be appreciated by persons skilled in the art, vector graphics use geometrical primitives (such as points, lines, curves, and polygons) which are based upon mathematical equations to represent objects in computer images. In contrast to vector graphics, raster graphics represent images as a collection of pixels. Raster images are based on pixels and therefore lose clarity when scaled, while vector graphics can be scaled almost indefinitely with little or no degradation.

Isaacs and Williams are not concerned with vector graphics or the delivery of Web-based vector graphics to wireless communication devices. In contrast, Isaacs and Williams are both directed to rendering 3D objects within a rendering environment of a graphics workstation for display on target devices that appear to be personal computers. Although vector operations may be performed on the 3D object models, Isaacs and Williams each generate a digital image or raster graphics image from the 3D object model which is displayed on the target device. The resultant image is not a vector graphics image as in the claimed invention. Noyle (cited in respect of claims 6-10) is similarly directed to rendering 3D objects and outputting a raster graphics image. Thus, none of Isaacs, Williams and Noyle are in the same field as the Applicant's field of

endeavour in that they relate to the rendering of 3D graphic objects to generate **raster graphics images** rather than the conversion of the previously rendered **vector graphics** for efficient delivery to wireless devices, as in the claimed invention.

Isaacs is concerned with providing a reduced level of detail in the 3D object through the removal of smaller polygons expected to be less visible in 3D objects viewed from a distance. Williams is concerned with modelling 3D objects using texture maps and geometric models. Noyle is concerned with maintaining connections between object data and surface data when accessed by multiple applications to allow multiple connections to the same data. To address this problem, Noyle provides am improved 3D graphics application programming interface (API). Thus, the problems addressed by Isaacs, Williams and Noyle are different from one another, and unrelated the problem addressed by the present application, namely the efficient delivery of graphics to wireless devices over a wireless network. Accordingly, none of Isaacs, Williams and Noyle is reasonably pertinent to the particular problem with which the inventor of the present application was concerned.

Thus, the Applicant considers all of Isaacs, Williams and Noyle to fail to meet either of the two criteria for being analogous prior art.

Failure to teach or suggest each and every limitation

Even if Isaacs Isaacs, Williams and Noyle are considered to be analogous art, the combination of references cited by the Examiner fails to describe, teach or suggest all of the claim limitations, as amended. Amended claims 1, 11, 14 and 17 have been amended to include the feature of, during the conversion of graphic data from a first path format to a second path format, the groups of triangles are combined into further polygon shapes that fall within complexity thresholds based on predetermined capabilities of a wireless device, and that the graphics object is a vector graphics object. These features are not disclosed in any of the cited references. While Isaacs discloses reducing polygons in a 3D object model, it is not in the context of a vector graphics object in a path format.

The Examiner points to paragraph [0033] of Williams for the feature of triangles of the 3D object having texture map/color scan data mapped thereto as teaching a path element (triangle) associated with a fill style (texture map/color scan data). However, these features are not equivalent. In Williams, surface information (texture or colour data) is mapped to a polygon mesh defining the 3D object in the rendering environment. However, the resultant image which is output and capable of display is a raster graphics image which is defined by pixels. In the claimed invention, a vector graphics object defined in a path format is defined, not by pixels, but logically by path elements (e.g., such as polygons defined by a mathematical function) having its interior associated with a fill style which specifies the content of the path element (e.g., polygon).

Furthermore, in Isaacs the polygon reduction is not based on complexity thresholds based on predetermined capabilities of a wireless device or other target device as in the claimed invention, as amended. Isaacs teaches a method for reducing the number of polygons in a 3D graphic object based on **user input.** The method disclosed by Isaacs is used by graphics designers in an authoring environment, such as Silicon Graphics WebSpace Author, when designing 3D images. The Examiner acknowledges this point and states, at page 6, paragraph 24, and at page 16, paragraph 96, that Isaacs teaches converting a 3D object of polygons to a lower complex model based on threshold **selected by a user**.

At page 10, paragraphs 45-53, the Examiner looks to Noyle which teaches the advantages of processing a triangle for efficiency and to W3C for transmitting data to mobile devices over a communications link. While Noyle describes the advantage of using a triangle in rendering 3D graphic systems, Noyle does not describe using complexity thresholds based on predetermined capabilities of the target device, nor the target device being a wireless device as in the claimed invention. The W3C reference discusses scalable vector graphics (SVG) in the context of mobile devices, but similarly does not describe the complexity thresholds being based on predetermined capabilities of the target device. The W3C reference is of background interest only.

The Probets reference describes a method of converting SWF images to a scalable vector graphics (SVG) images, but does not describe reducing the SVG images as claimed, nor the reduction being based on complexity thresholds based on predetermined capabilities of the target device.

The delivery of graphics data is not addressed by Isaacs or Williams. In Isaacs and Williams, the delivery of graphics is a downstream concern as these references are concerned with graphics rendering. The Examiner states at page 6, paragraph 25, that the transmission of data to a mobile device is well known in the art because it allows the sending and receiving of data without being constrained in location and time of data transmission. It will be appreciated that this feature is part of the overall solution provided by the present invention, and when the amended claims are viewed as a whole, the claimed methods, system and computer program product provide a solution to delivery graphics which is neither taught nor suggested by the cited references as explained below.

The claimed invention, as amended, provides a solution for converting graphic object data defining a vector graphics image from an edge based format to a path based format, and for reducing the polygons in the path based format by converting the polygons into triangles and combining these triangles based on complexity threshold based on the **predetermined capabilities of the target wireless device**, and for delivering the converted data to the target wireless device for display thereon.

Thus, in the claimed invention, the complexity thresholds applied are selected based on the capabilities of the media engine at the wireless device on which the graphic object is to be transmitted and displayed. This is in contrast to Isaacs where polygon reduction is based on **user input**. As noted at paragraph [0039] of the present application, the complexity thresholds applied typically depend on the processing and memory resources available at the wireless device and the bandwidth of the communications channel. The complexity thresholds may vary depending on the requirements of the specific application which will be used to display the graphic object. Thus, complexity thresholds may be tailored to the target wireless device to which the

data is to be delivered to optimize the delivery of graphics data in terms of device capabilities which are constrained, which may vary between devices connected to the wireless network, and which vary over time as device capabilities increase.

The claimed approach of graphics conversion and delivery provides a balance between reducing the amount of data sent to a wireless device to preserve bandwidth and device resources (e.g., memory and processing load) and reduce the data charges associated with transmitting graphic object data to the wireless device, while optimizing the quality of the image by taking into account the device capabilities. This is contrast to Isaacs where the complexity threshold applied during polygon reduction is user based and will be the same for all target devices (i.e., computers) on which the resultant image will be displayed. It is because the conversion and transmission of graphic object data occur together, that it is possible to tailor the converted graphics data for the target device. In Isaacs and Williams, customization of graphics data for the technical capabilities of the target device is not possible.

Summary

Thus, the cited references fail to teach or suggest each and every limitation of the amended claims in that, in the claimed invention the vector graphics are used, the complexity thresholds used in reducing polygons of the vector graphics object are based on predetermined capabilities of a wireless device on which the graphics are to be viewed, and transmitting the resulting vector graphics data to the wireless device. The differences between the claimed invention and the combined teachings of the cited references noted above require many technical adaptations and are not a mere "workshop improvement". Therefore, it is submitted that amended independent claims 1, 11, 14, and 17 are patentable in that the cited references fail to teach or suggest each and every feature recited. Claims 3-10, 16, 19 and 22 depend, either directly or indirectly, from claim 1, 11, 14 or 17 and are patentable for at least the same reasons.

Furthermore, the primary reference relied upon are considered to be non-analogous prior art which a person skilled in the art would not even look to solve

problems in displaying vector graphics on wireless devices having limited bandwidth and/or processing power. The Applicant notes that in rejecting the subject matter of former claim 6, the limitations of which have now been largely incorporated into independent claims 1, 11, 14, and 17, the Examiner relies on five prior art references as well as reliance on features being "well known" in the prior art. The necessity to found the rejection on such a large number of references, several of which are outside the Applicant's field of endeavour, and the reliance on the "common knowledge" of the skilled person, in and of itself suggests that the claimed invention, as amended, is not obvious.

In view of the foregoing remarks and submissions, the Applicant respectfully requests reconsideration and submits that the present application is in condition for allowance. Should the Examiner have any questions in connection with the Applicant's submissions, please contact the undersigned.

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